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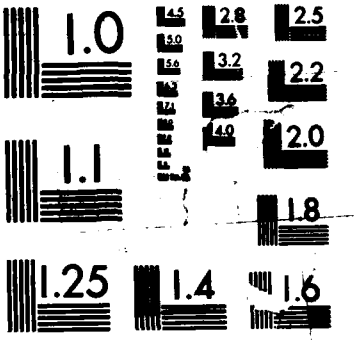

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FOREIGN TECHNOLOGY DIVISION

METHOD OF OBTAINING POLYMERIC MATERIALS

by

V.A. Berestnev

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By: V.A. Berestnev

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Block	Italic	Transliteration	Block	Italic	Transliteration
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yё or ё.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log

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METHOD OF OBTAINING POLYMERIC MATERIALS

V. A. Berestnev

Are known two methods of orienting macromolecules, accomplished by stretching of the heated polymer above temperature of vitrification or the treatment of polymer by special catalysts or by modifiers.

In the proposed method of obtaining polymeric materials the orientation of macromolecules is accomplished by the effect of electric or magnetic field, which makes it possible to improve the quality of the obtained polymeric materials and to decrease expenditures.

Method consists of the following.

Monomer or the mixture of monomers is poured into the reactor, manufactured from the nonmagnetic material and which has the form of cylinder. Reactor is placed into the electric or magnetic field, whose lines of force are directed in parallel to the axis of cylinder. Then they start polymerization. In the generating polymer the aggregates of molecules are oriented in parallel to the axis of cylinder. (Russian translation)

According to the second version the fiber or film formed from the fusion or solution passes within the solenoid. The structural elements in this material will be oriented along the axis of solenoid.

The proposed method in the literature is not described and from known sources differs in terms of simplicity of technological process, in terms of reduction in the expenditure of electric energy, in terms of decrease of production areas, in terms of improvement in the quality of the obtained polymer.

Figs. 1, 2, 3, 4 show the versions of the realization of the proposed method.

Example 1 (see Fig. 1). Monomer or mixture of monomers with initiator of polymerization is placed into reactor 1, manufactured from nonconducting electric current of nonmagnetic material, and having form of parallelepiped or cylinder. Reactor is located between the shoes of permanent magnet 2, whose lines of force are directed in parallel to the axis of cylinder.

The supply of monomer into the reactor is accomplished continuously with speed, approximately equal to speed of polymerization. In this case from bleed hole 3 of reactor will go out the uninterrupted strip of material 4 with the structure, oriented in parallel to the axis of cylinder, and enter receiving fitting 5.

For the magnetic biasing, electromagnet has spool 6.

Example 2 (see Fig. 2). Molded from the fusion or the solution, which is located in container 1, fiber(film) passes within solenoid 2,

located near draw plate 3 in that region, where the material did not have time either to cool (if molding is conducted from the fusion), or to coagulate or to dry (if molding is conducted from the solution). Then molded polymer 4 enters receiving fitting 5. Elements of structure in this material will be oriented along its axis.

Example 3 (see Fig. 3). Metallic part (base) 1 is placed in field of permanent magnet 2. Dotted line shows the magnetic lines of force, which are concentrated on the surface. If we to the part before or after its placement into the magnetic field apply varnish or paint, then after their drying out (or polymerization) is formed a layer of the polymer, in which the structural elements are oriented along the surface of base. In order to obtain the orientation of structural elements perpendicular to the surface of base, the painted part must be turned by 90^{o}.

For the magnetic biasing, electromagnet has spool 3.

Example 4 (see Fig. 4). Finished article 1 in the form of fiber or film continuously enters from feeding fitting 2 into chamber 3, warmed by preheater 4. In this chamber by solenoid 5 is created the magnetic field, whose lines of force are directed in parallel to the axis of article. In this direction will be oriented the elements of the structure of polymer. The direction of the motion of article is assigned by guides 6. The tension of article is determined by a difference in the speeds of feeding fitting 2 and removing fitting 7.

The realization of method will make it possible to reduce production area and to decrease power expenditures in obtaining polymeric materials with prescribed properties.

Object of Invention

The method of obtaining of polymeric materials and articles made from them with the prescribed orientation of macromolecules with the utilization of electric energy as the source of mechanical force, is characterized by the fact that, for the purpose of an improvement in quality and reduction in the expenditures, the process is conducted in an electric or magnetic field.

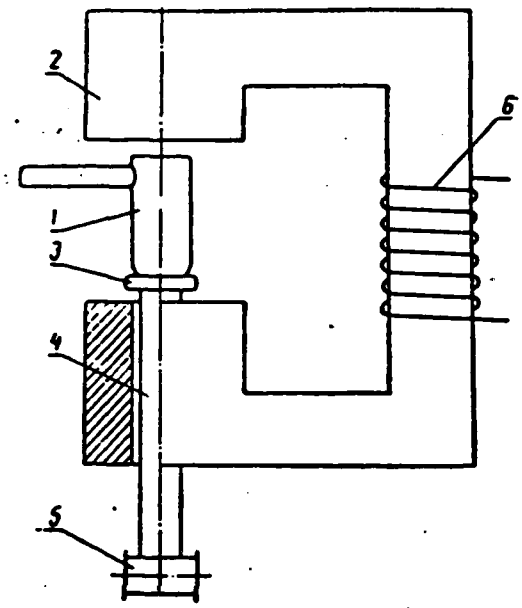

Fig. 1.

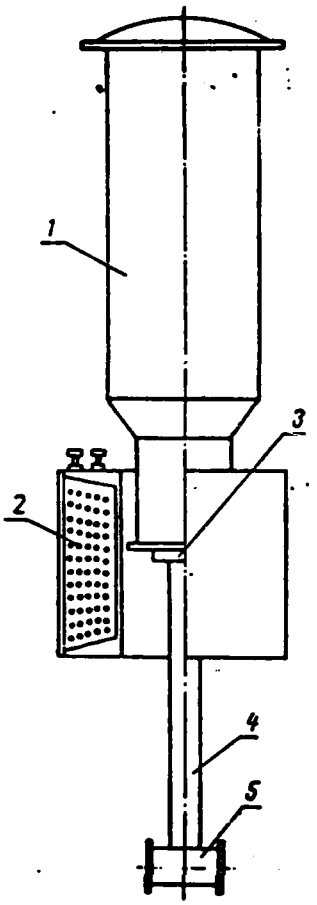

Fig. 2.

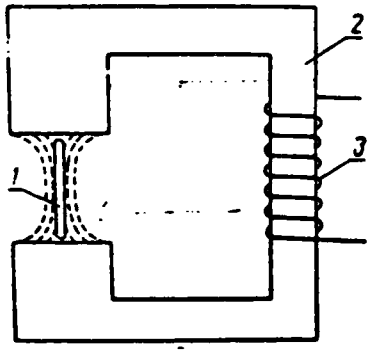

Fig. 3.

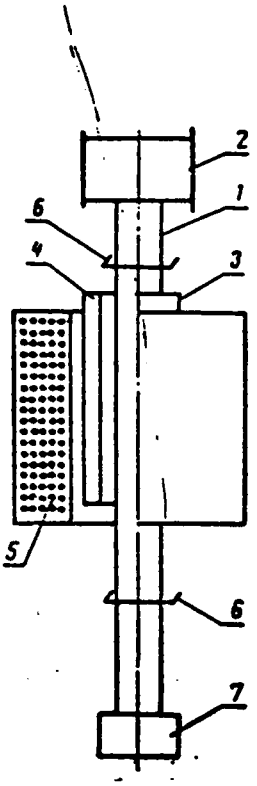

Fig. 4.

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